
ROBOTIQ
Tips for Success With Collaborative Robots
Plug + Play Automation for Manufacturers

LEAN ROBOTICS

Lean Robotics: Simplify Robot Cell Deployments

Whenever you ask if robots could work in your factory, the answer you receive is always a hesitant “It depends.” It depends on your factory, your team, which robot you choose, what you want it to do... and a whole lot more.

If you're a first-time robot user, how can you get started? How do you get from your initial idea to a productive, working robot? And if you’ve already got a few robotic deployments under your belt, how can you scale up your robotics efforts throughout your factory—or across multiple factories?

The answers can be found in **lean robotics: a methodology for simplifying robotic cell deployments**.

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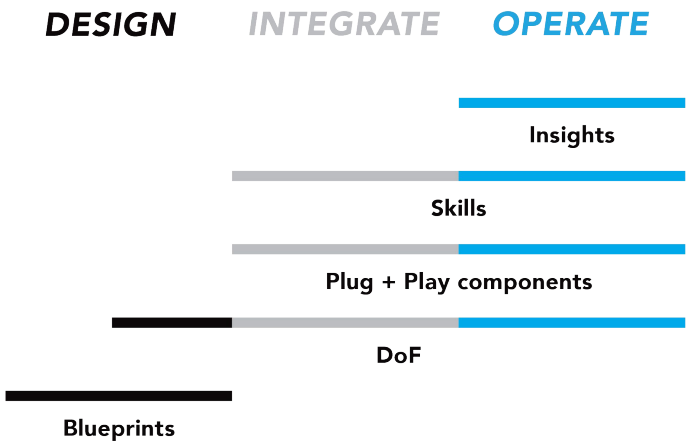
Lean robotics is a systematic way to complete the robotic cell deployment cycle, from design to integration and operation. It will empower your team to deploy robots quicker and more efficiently than ever before.

Lean robotics divides robotic cell deployments into three phases: Design, Integrate and Operate.



Robotiq's library of eBooks covers the different phases of the robot cell deployment to ensure that you have access to tips from robotics experts all along.

Learn more about Lean Robotics on **leanrobotics.org**.

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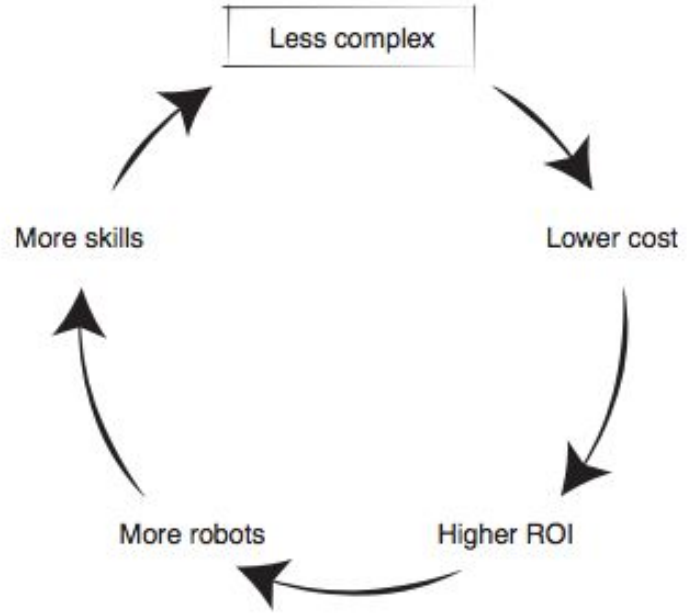
This Ebook Covers the Operate Phase

OPERATE

The operate phase represents the end goal of deployment: having a productive robotic cell that does its job properly on an ongoing basis.

When you're in the operate phase, your robotic cell is finally producing valuable parts for your company, and all your hard work will start to pay off. Since the operate phase is a continuous loop, there are many tips to optimize your robot cell and planning for the next one.



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WHY YOU SHOULD HAVE STARTED YESTERDAY

THE SKILLS GAP IN US MANUFACTURING

2 MILLION

Manufacturing jobs

going unfilled in the next decade in the US

Source: The skills gap in US manufacturing: 2015 and beyond

(Deloitte, The Manufacturing Institute)

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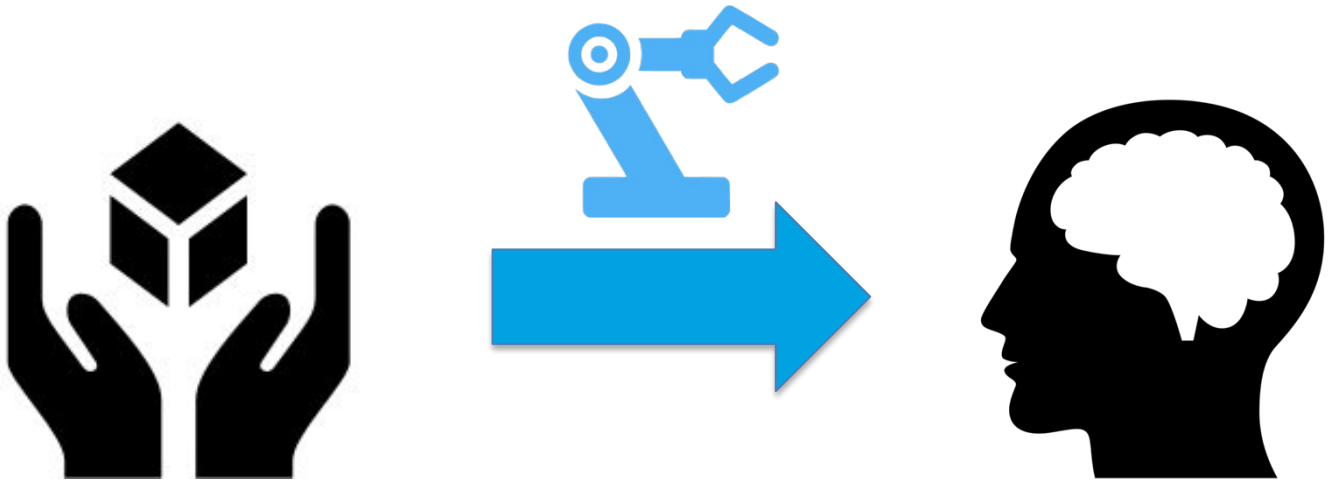
ROBOTS TO THE RESCUE ?!



With robots
manual skills convert into automation skills

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ROBOTS TO THE RESCUE ?!

10 X

more difficult to find “robotics” skills than “machinist” skills in the US workforce

Source: Wanted Anadalytics reports, 2015

103 “machinist” skills candidates / job opening

10 “robotics” skills candidates / job opening

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AUTOMATION KNOW-HOW IS CRITICAL

Limited automation resources put manufacturers at risk:

Firefighter Risk

Always reacting to urgent requests VS investing in non-urgent but important, impactful moves

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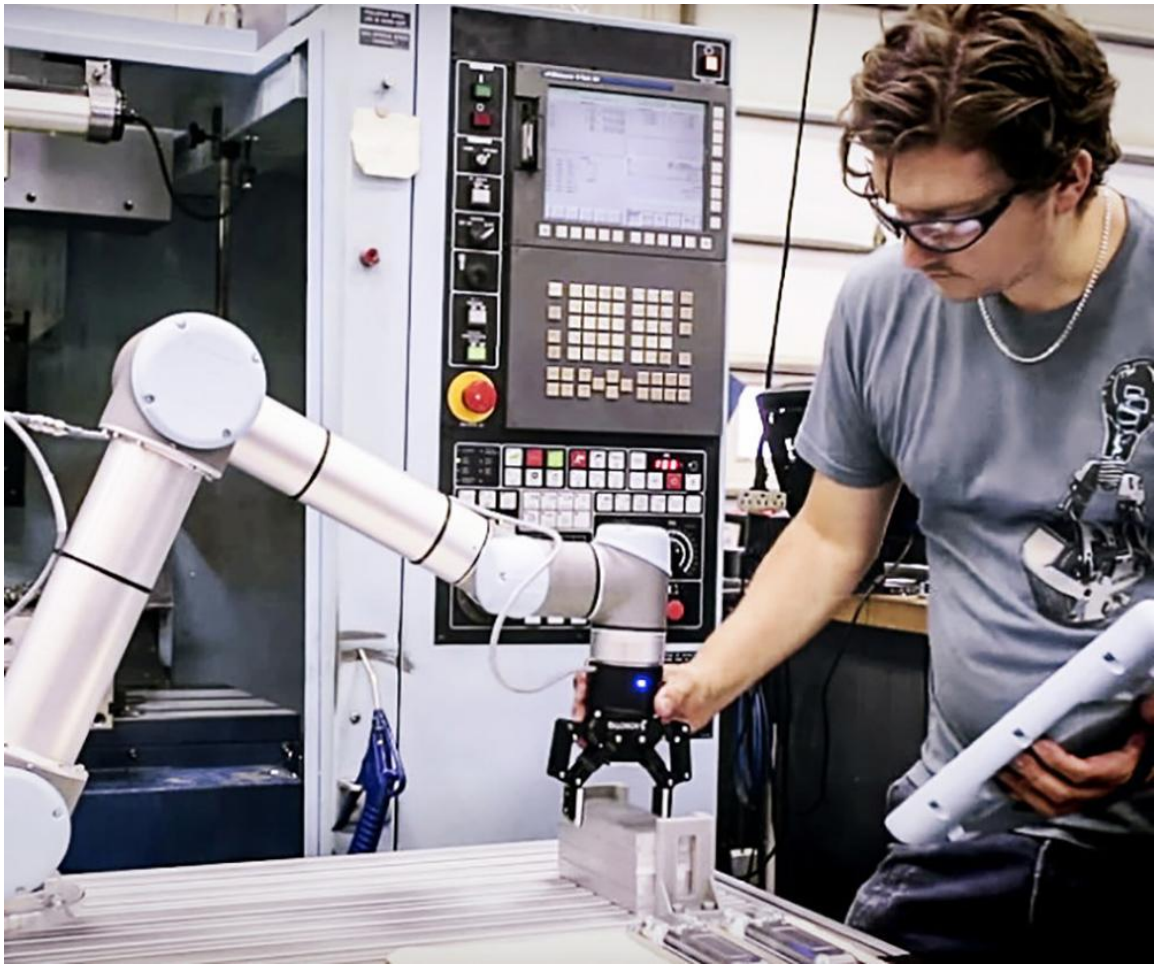
AUTOMATION KNOW-HOW IS CRITICAL

Limited automation resources put manufacturers at risk:

Dependency Risk

Robot know-how in a few (maybe just one in SMEs!) heads.



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AUTOMATION KNOW-HOW IS CRITICAL

Manufacturers need to :

1. Automate manual operations

2. Leverage automation know-how

3. Reduce risk of limited automation know-how

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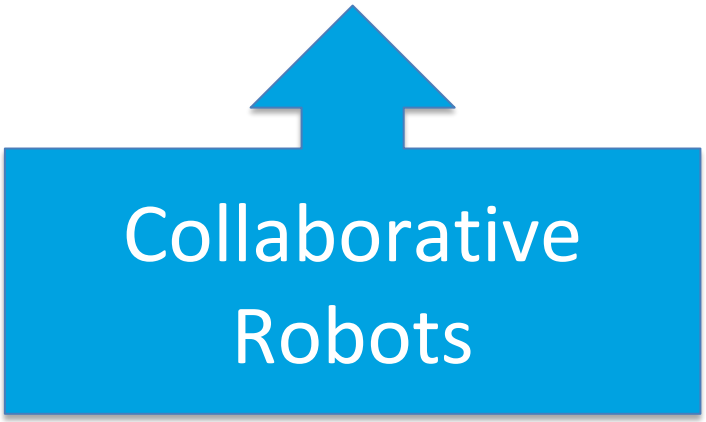
AUTOMATION KNOW-HOW IS CRITICAL

How manufacturers can do it :

1. **Invest in easy-to-use platforms**
2. **Standardize, minimize custom work, reuse components**
3. **Build, share internal automation know-how**



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HOW THEY GOT STARTED

[WHIPPANY ACTUATION VIDEO]

THE TEAM

Phil, Mfg. Eng. Lead

Russ, Mfg Eng.

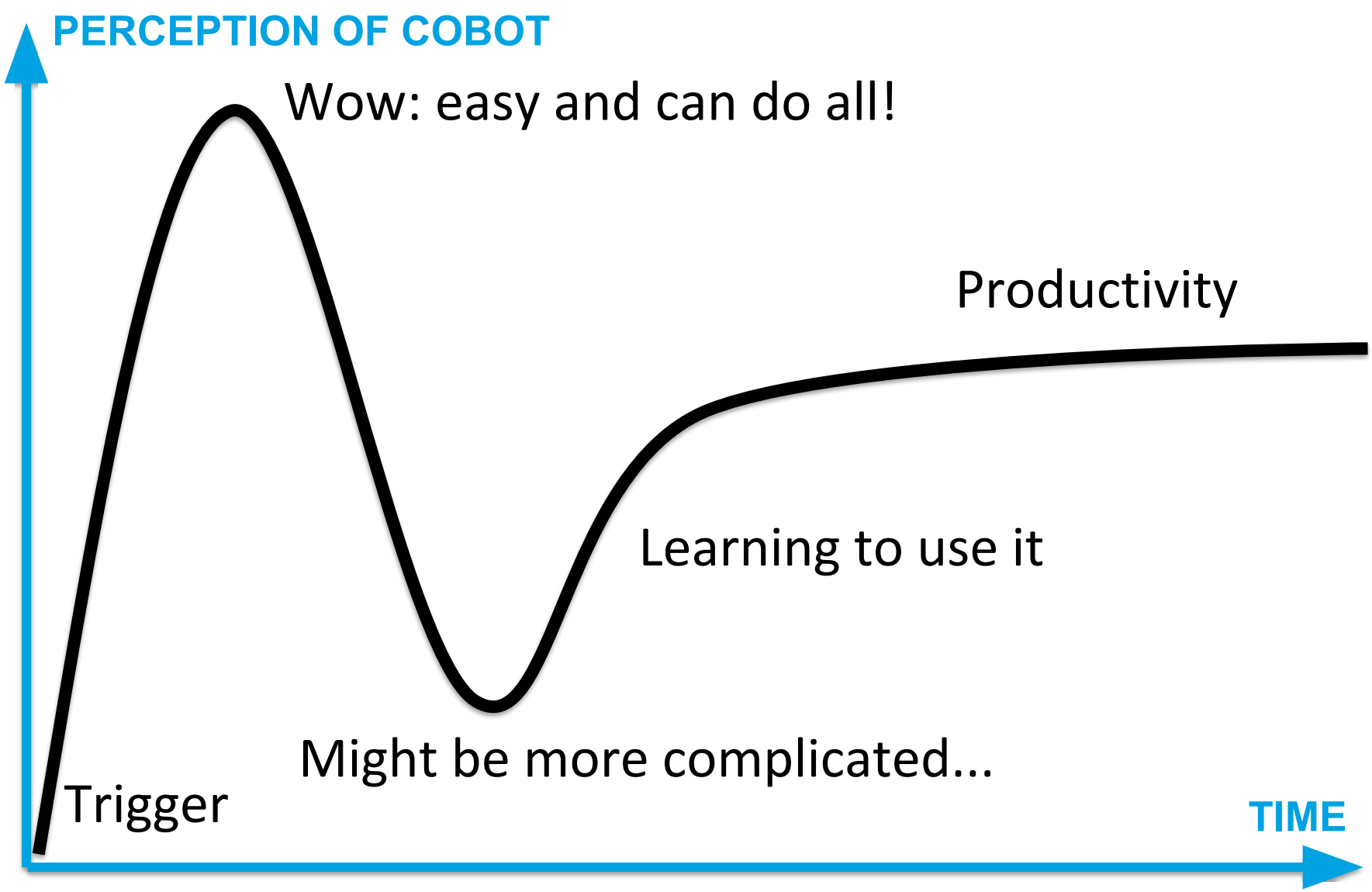
Technical Champion

Eric, App. Eng.

Distributor acts as a coach

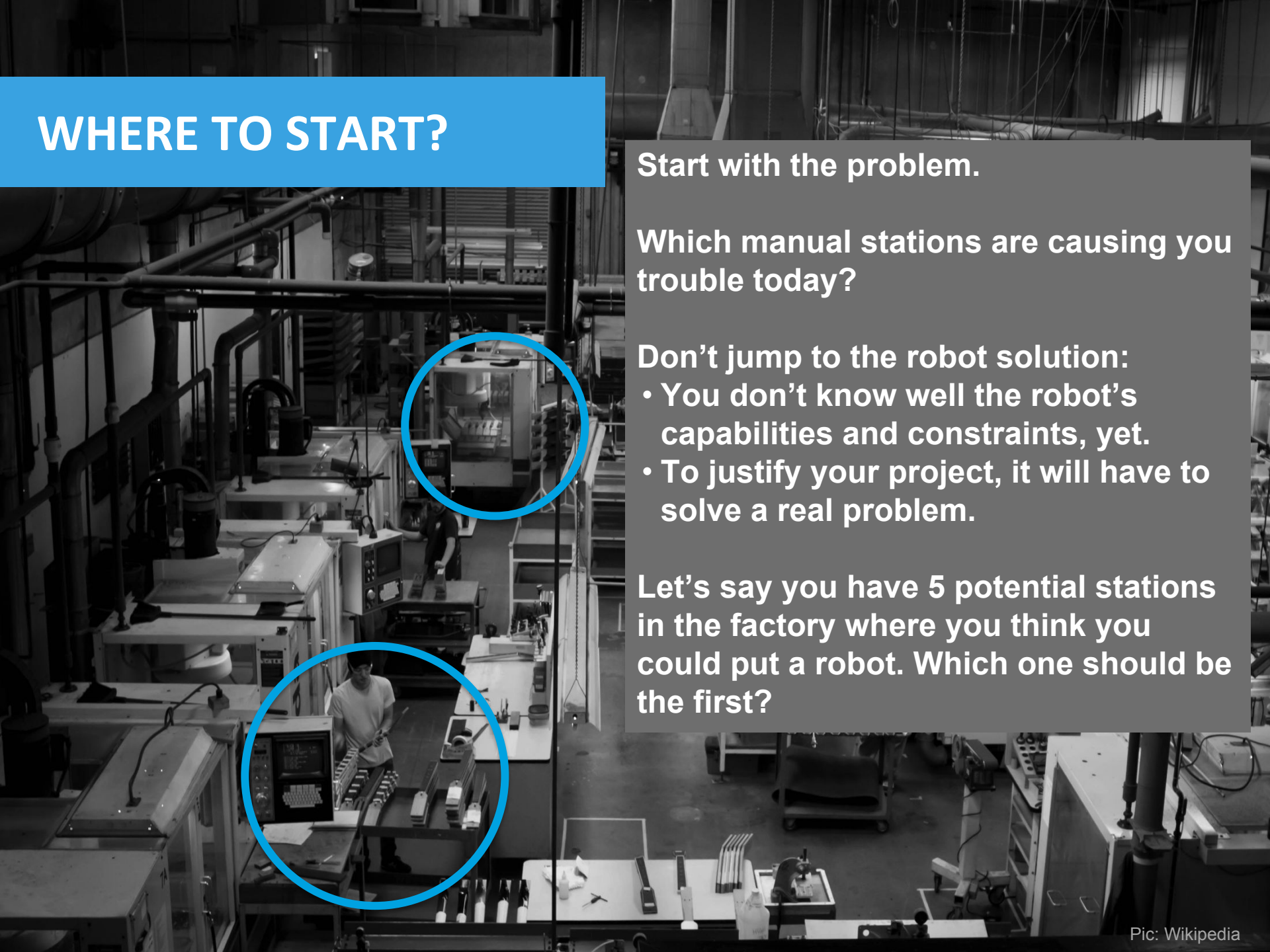
Pat, Machinist

THE PROCESS



Pic: Gartner Hype Cycle, adapted from Wikipedia

WHERE TO START?



Start with the problem.

Which manual stations are causing you trouble today?

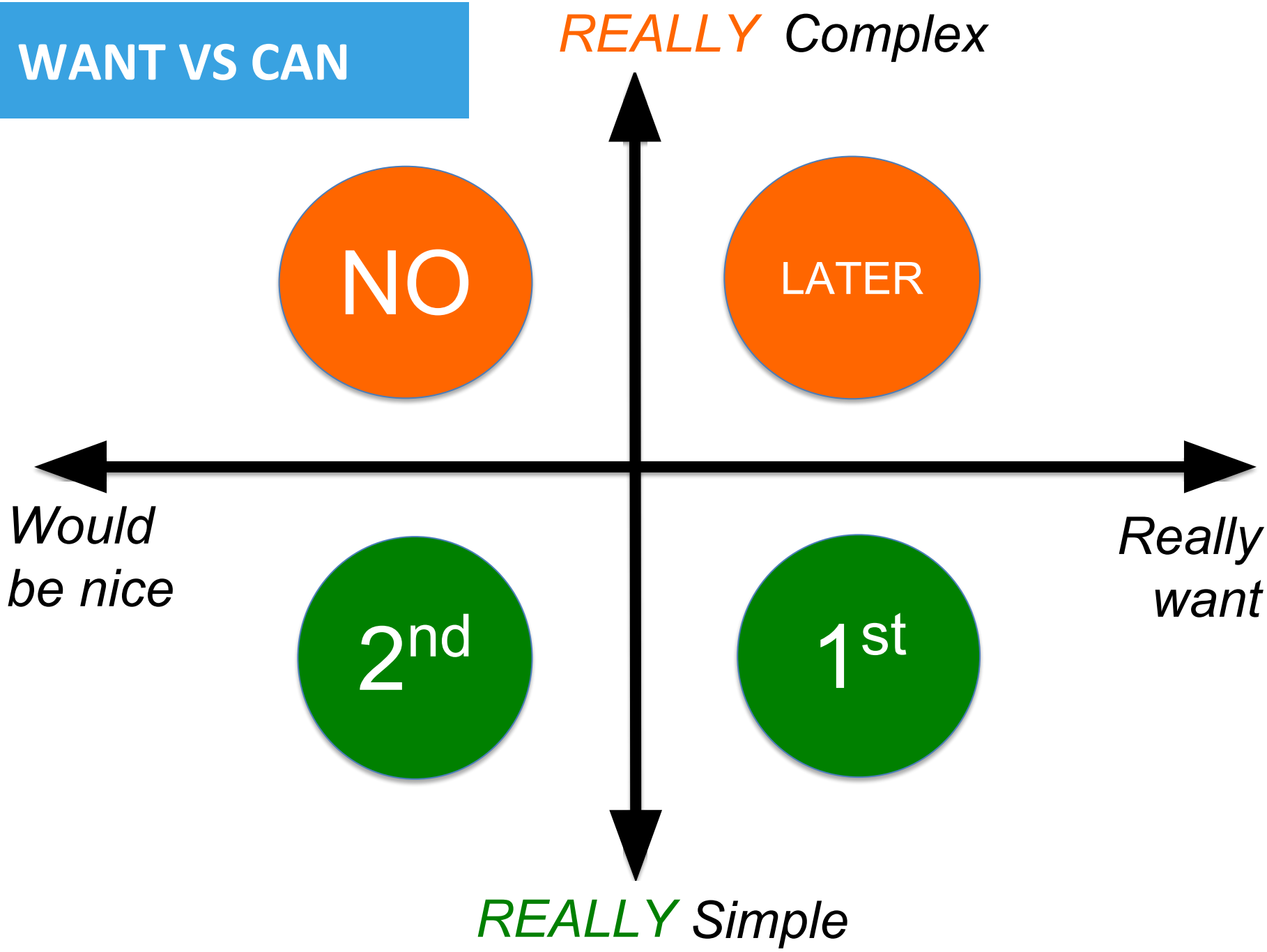
Don't jump to the robot solution:

- **You don't know well the robot's capabilities and constraints, yet.**
- **To justify your project, it will have to solve a real problem.**

Let's say you have 5 potential stations in the factory where you think you could put a robot. Which one should be the first?

Pic: Wikipedia

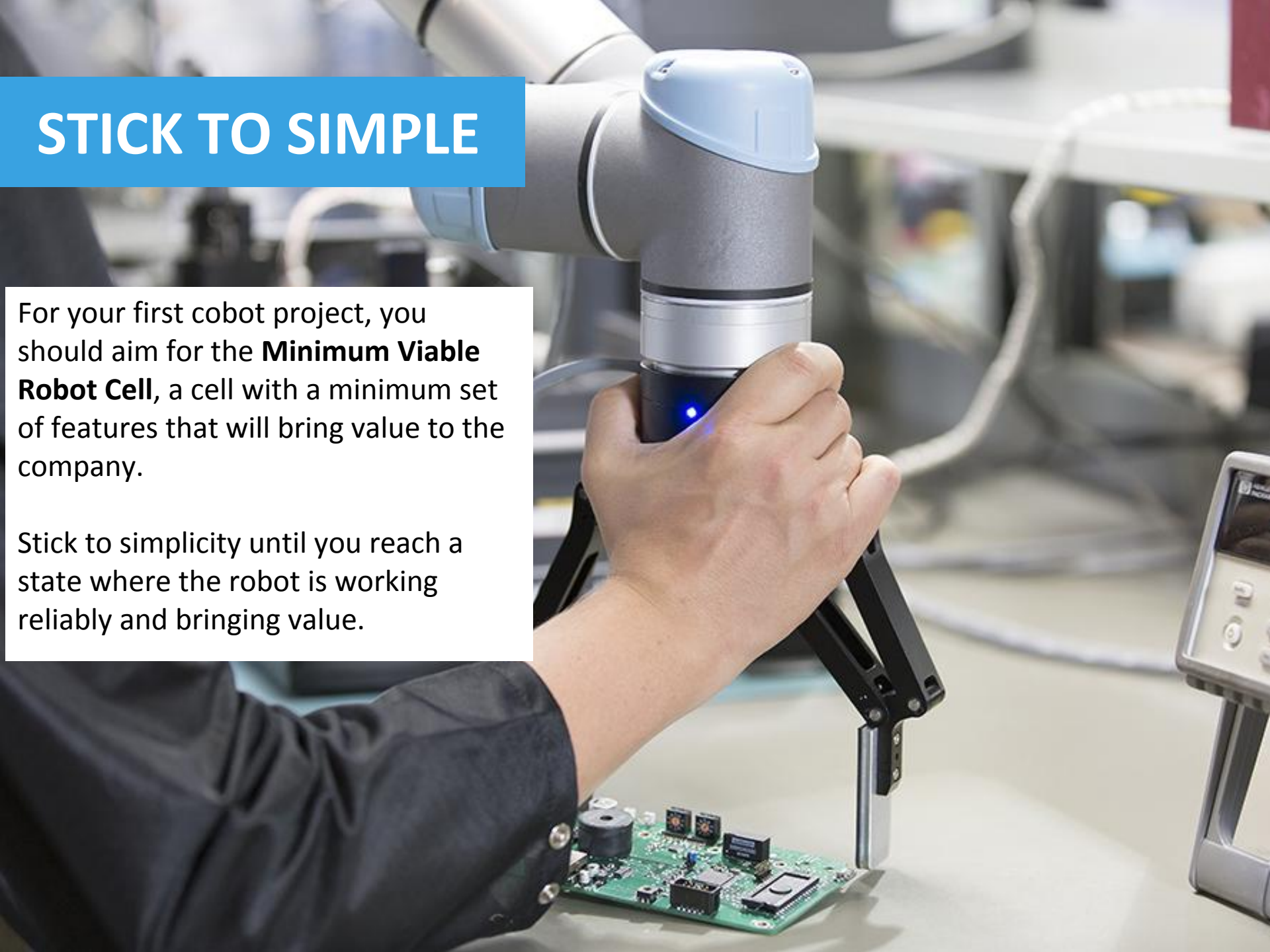
WANT VS CAN


REALLY Complex
NO
LATER
Would be nice
Really want
2nd
1st
REALLY Simple

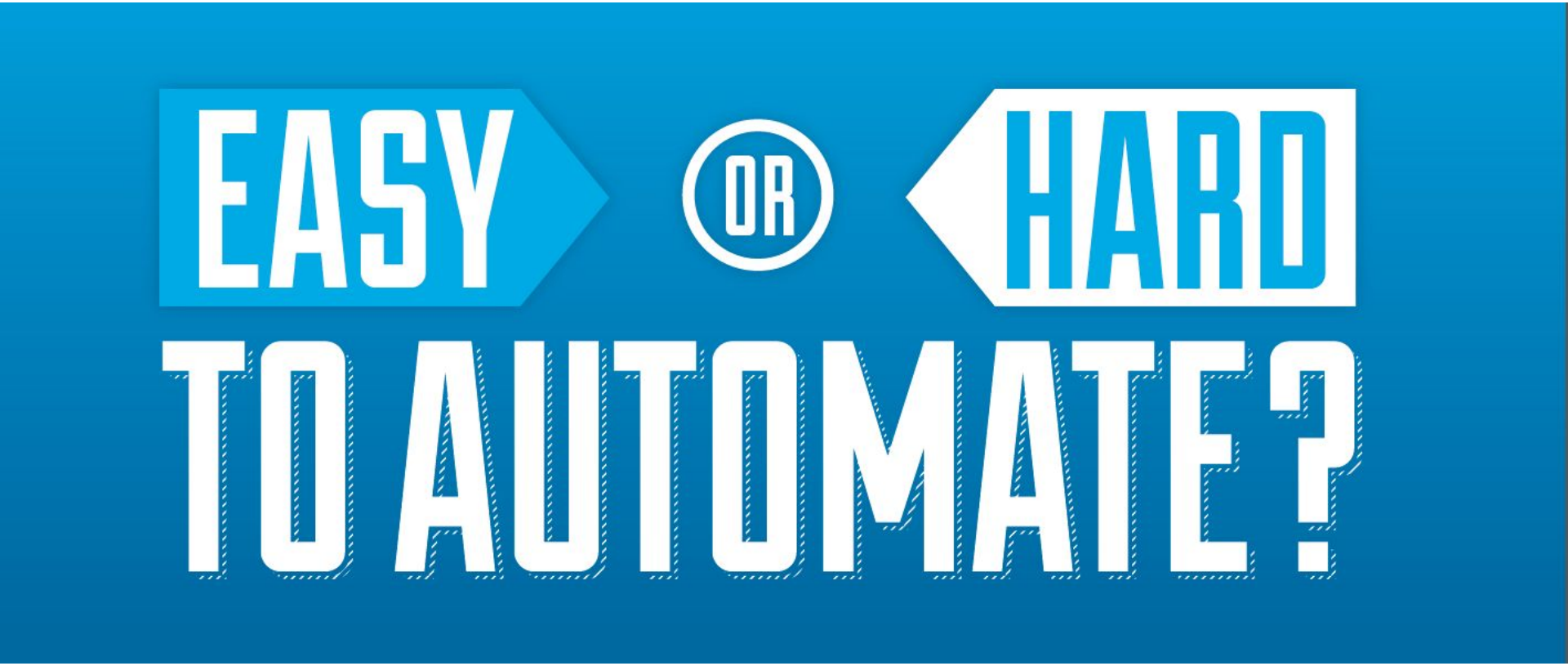
STICK TO SIMPLE

For your first cobot project, you should aim for the **Minimum Viable Robot Cell**, a cell with a minimum set of features that will bring value to the company.

Stick to simplicity until you reach a state where the robot is working reliably and bringing value.



How Should I Know if it's Easy or Hard? I've Never Worked with Robots Before!

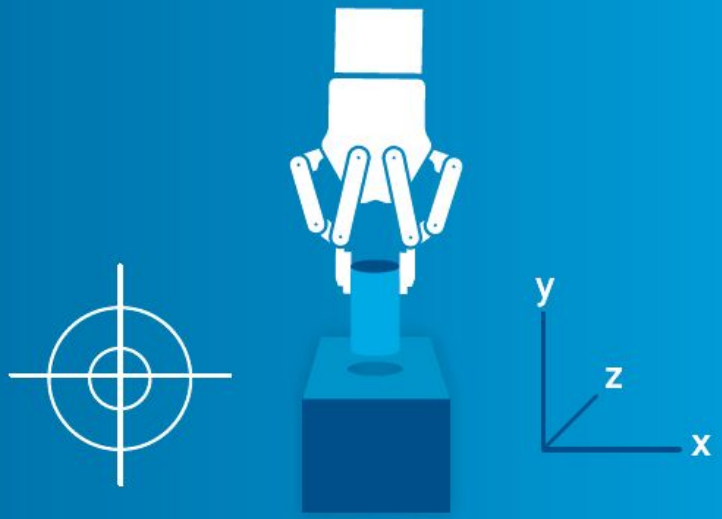


EASY

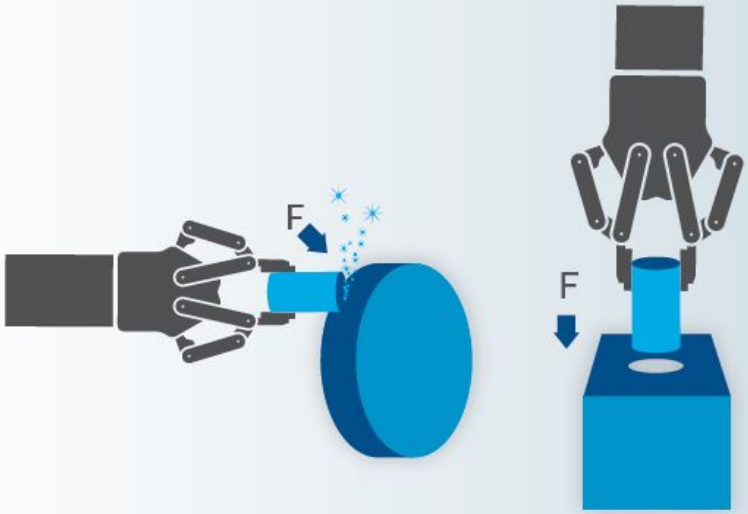
HARD

TASKS

Picking and placing parts; following a path without applying force



Force control such as polishing and grinding; precision assembly



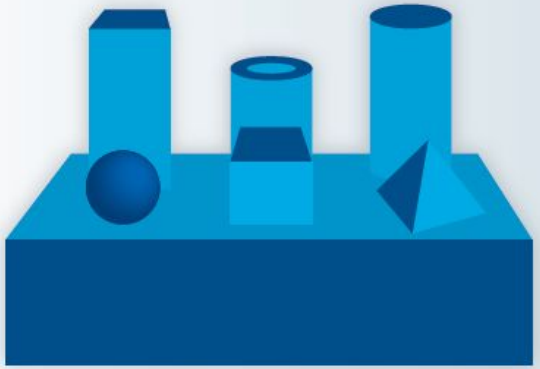
EASY

HARD

PARTS

Limited number of different parts;
known, regular shape

Wide range of different parts;
irregular, deformable, fragile parts



EASY

HARD

PARTS PRESENTATION

Parts presented one by one or ordered in a tray or pallet; always in the same position and orientation

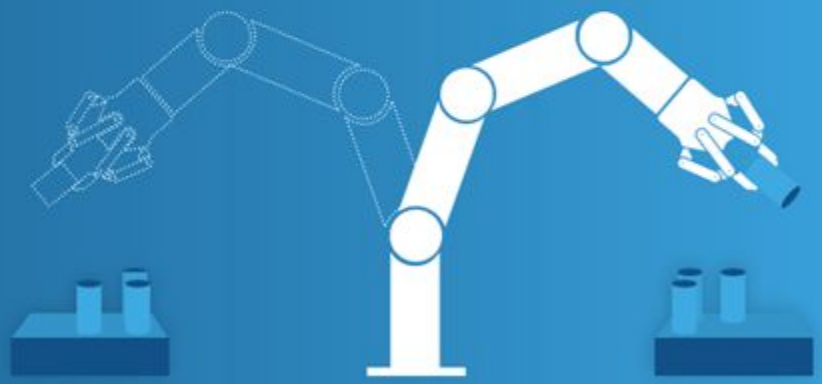
Bin picking; fast moving conveyors

EASY

HARD

PROGRAMMING

Repetitive tasks that follow the same sequence every time



Complex logic with multiple conditions and robot sensor input

EASY

HARD

INTEGRATION

The robotic industry doesn’t have widely adopted standards. This brings up a challenge when it’s time to make different machines interact together.

ROI

Since it's your first cobot project, your ROI calculation is based on assumptions and hypotheses. The cost of material is easy to figure out, but the time to integrate, the ramp up to full production, the downtime and the labor savings will all be educated guesses.

This is why Learning on Investment (LOI) is important…

LOI

Learning on Investment

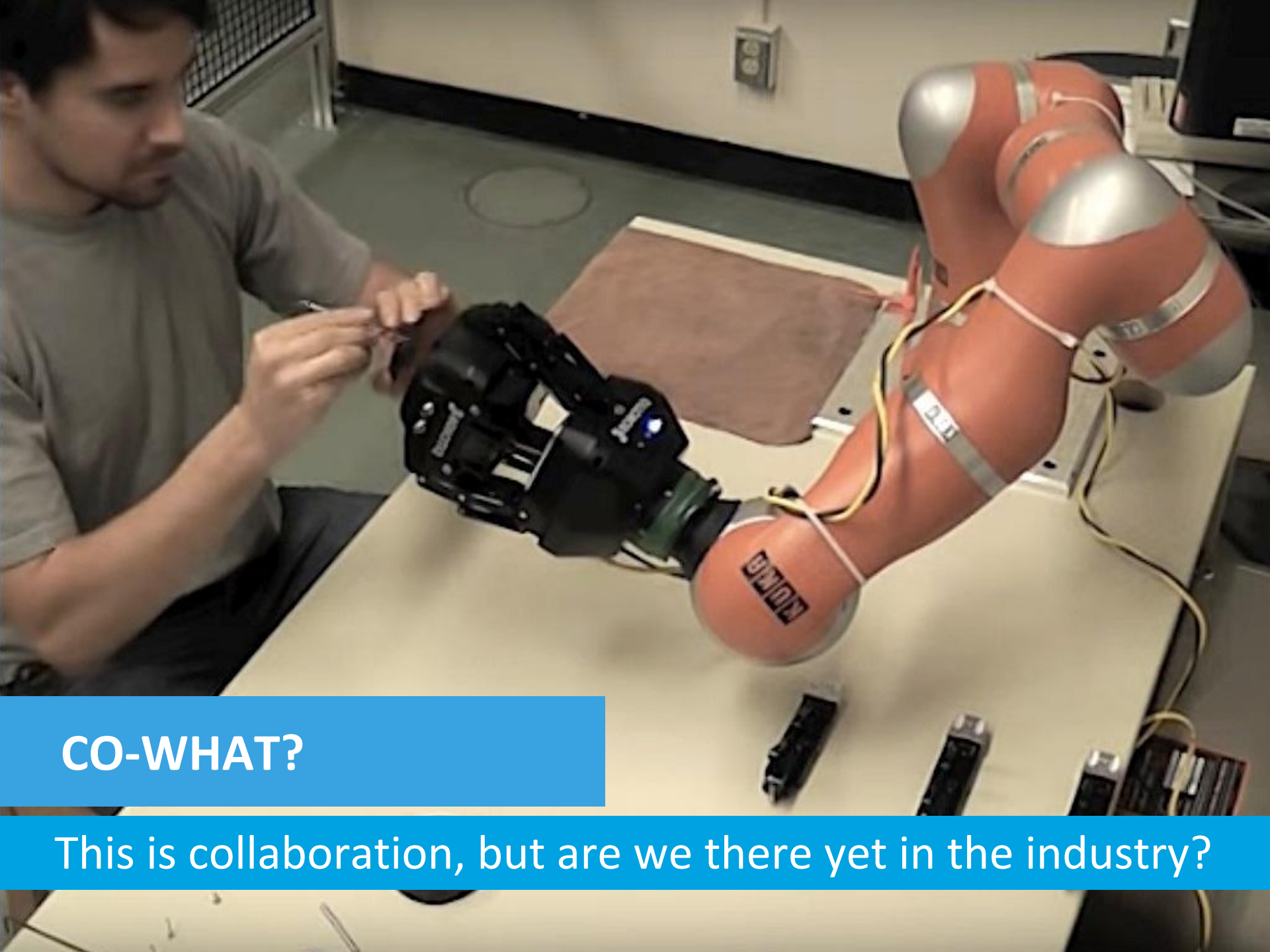
Define what you need to learn from your first installation, document along the way so you can leverage that investment in the near future.

SAFETY

We can’t omit the safety subject when talking about collaborative robots. It’s often an issue and a blocker in certain robotic projects.

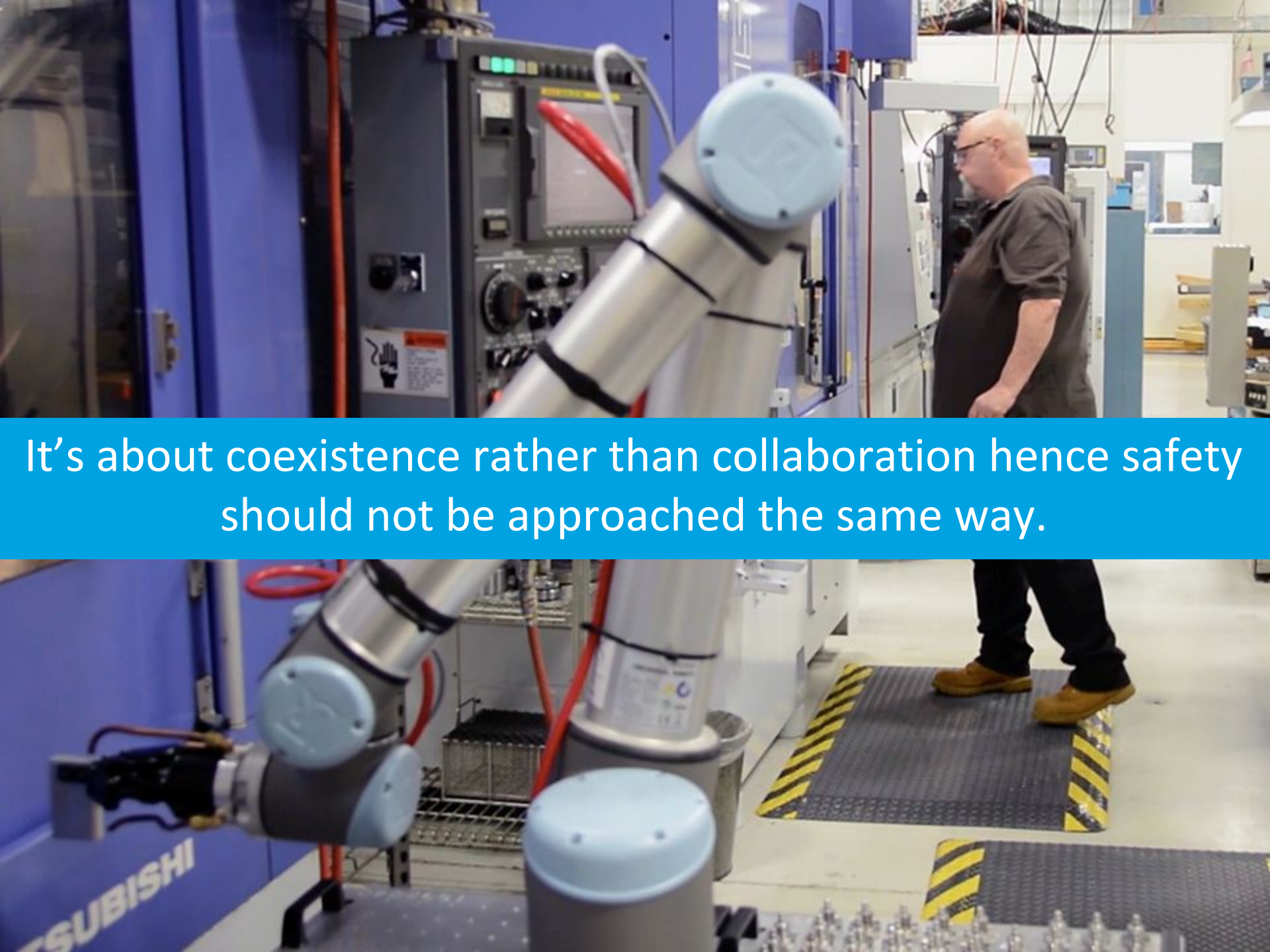
There are other multiple “dangerous” tools and machines on your plant floor and you were able to train your workforce for these tools to now be acceptable assets in your plant.

The same applies to cobots. You’ll be able to find the resources to make those new tools safe for your workforce.

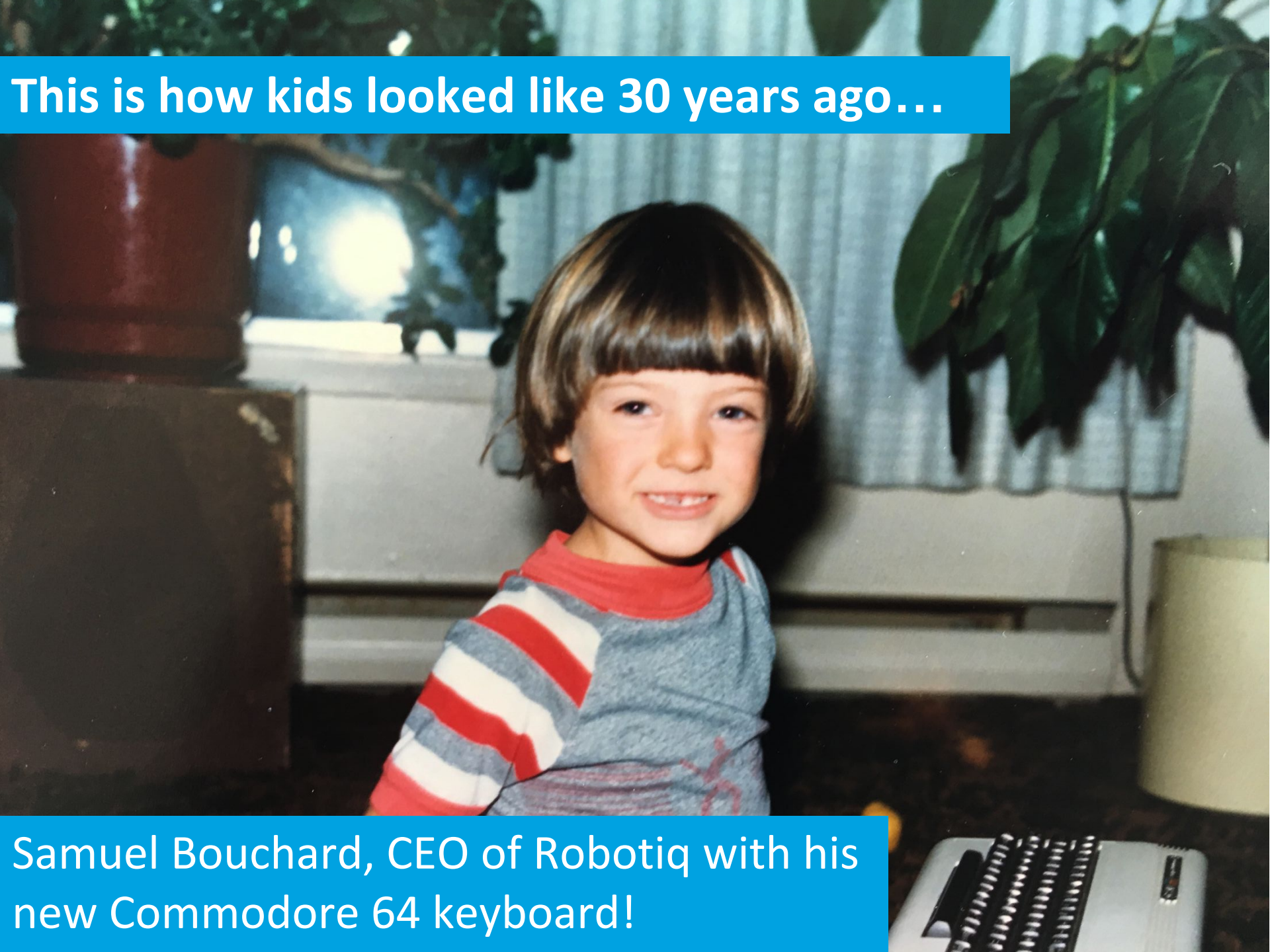


CO-WHAT?

This is collaboration, but are we there yet in the industry?

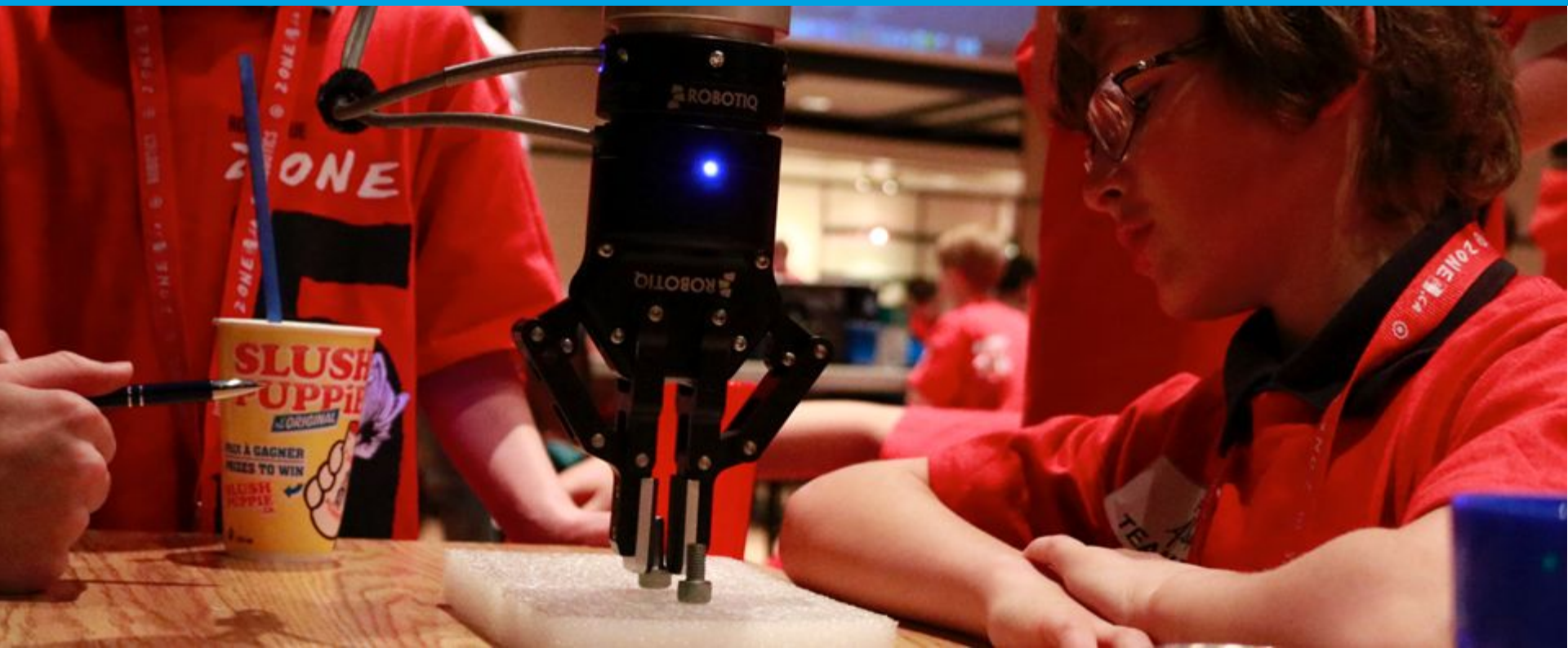


It’s about coexistence rather than collaboration hence safety should not be approached the same way.


This is how kids looked like 30 years ago…
Samuel Bouchard, CEO of Robotiq with his new Commodore 64 keyboard!

This is how kids look like TODAY…

Cobots are a great way to bring youth and innovation in your factory floor, which is vital today.



CHECKLIST FOR 1ST SME COBOT SUCCESS

- ❑ Start now!
- ❑ Target ROI & LOI
- ❑ Find and free your Tech Champion
- ❑ Involve managers and co-workers from day 1
- ❑ Start with the problem, not the robot
- ❑ Start simple, stick to simple

Robotiq.com/gettingstarted

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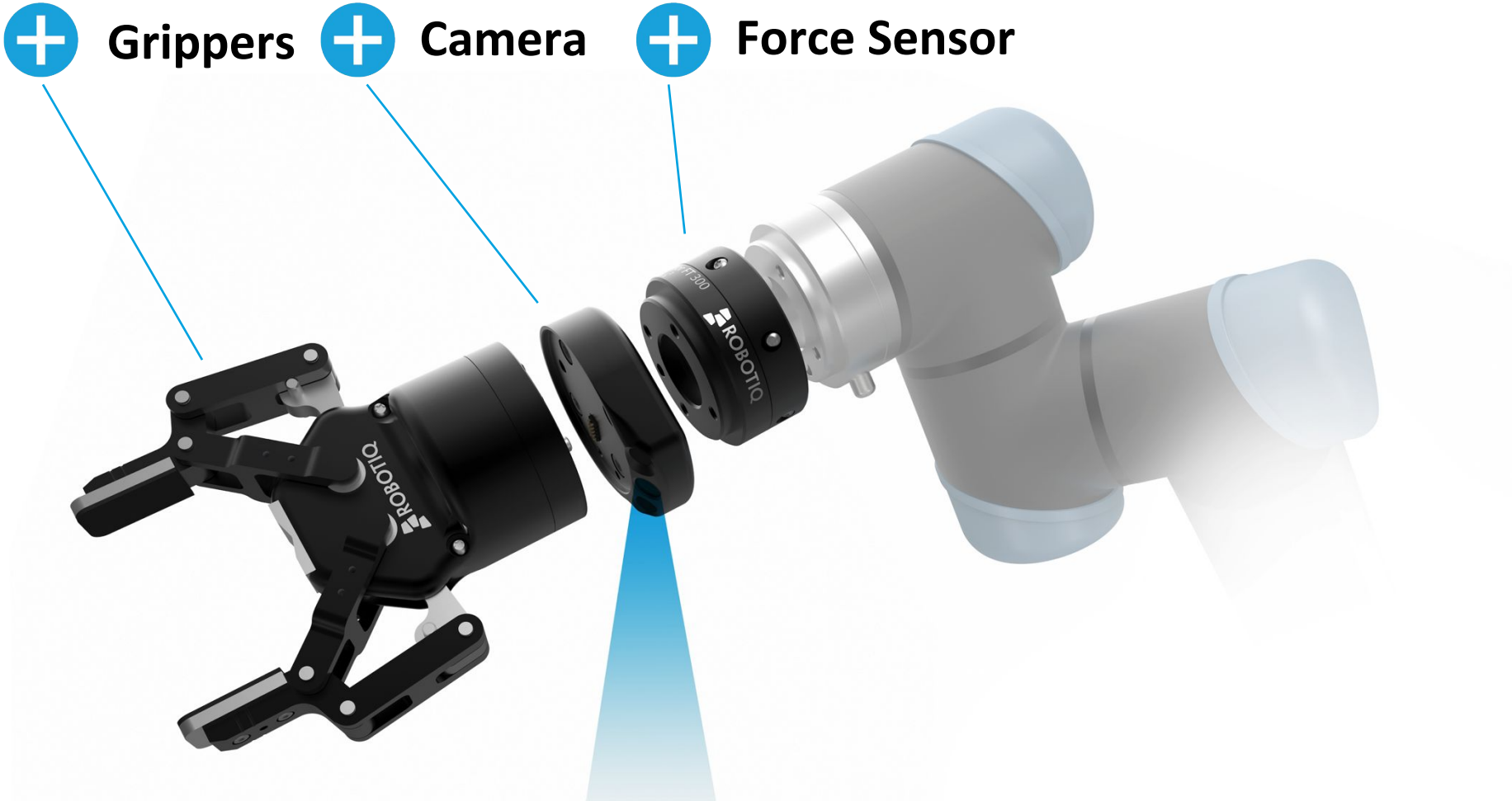
UR+ ROBOTIQ

THE STANDARD, EASY-TO-USE ROBOTIC PLATFORM FOR YOUR FACTORY

UNIVERSAL ROBOTS + ROBOTIQ

Grippers Camera Force Sensor



EASY TO INTEGRATE

EASY TO PROGRAM

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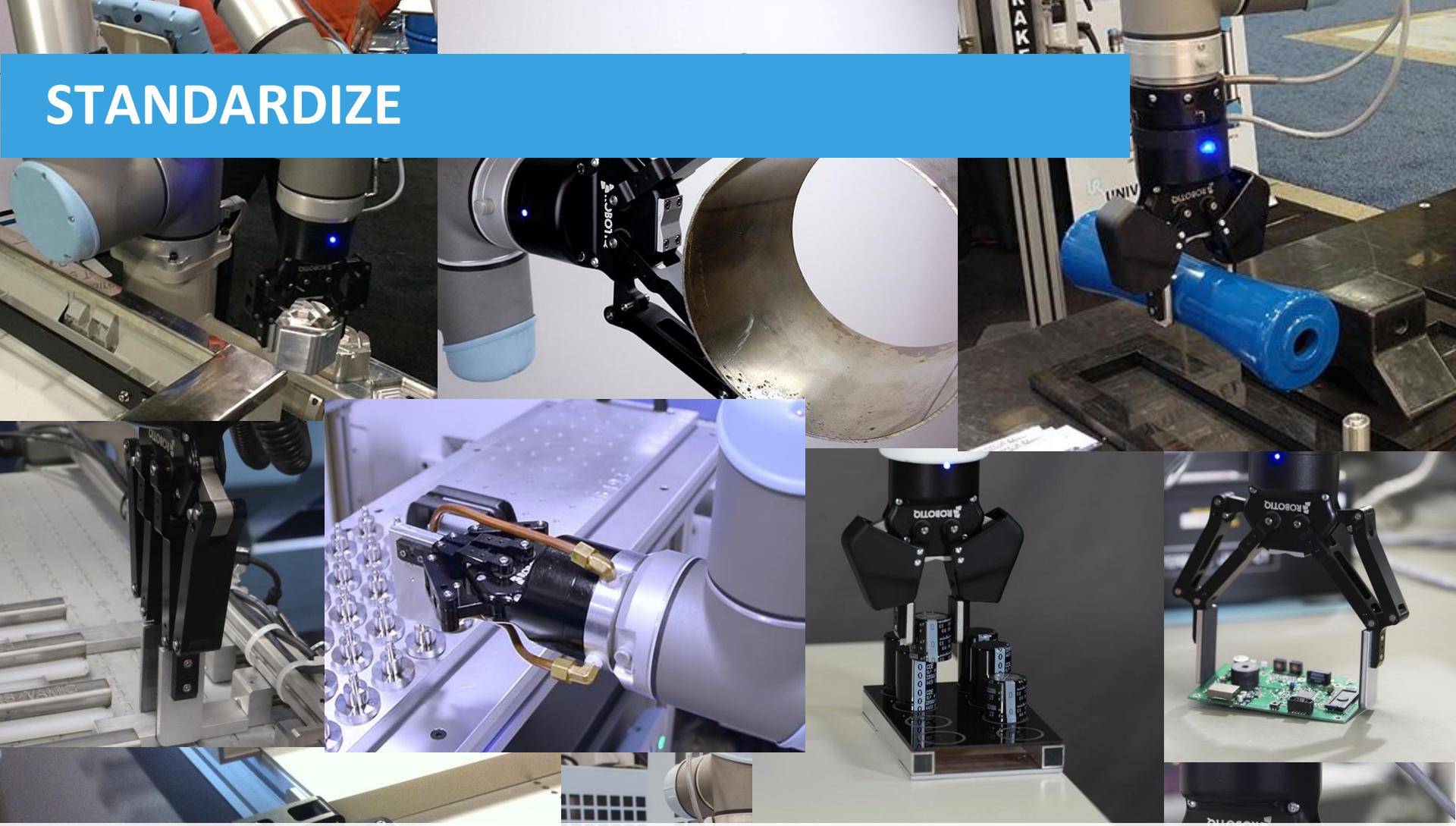
STANDARDIZE



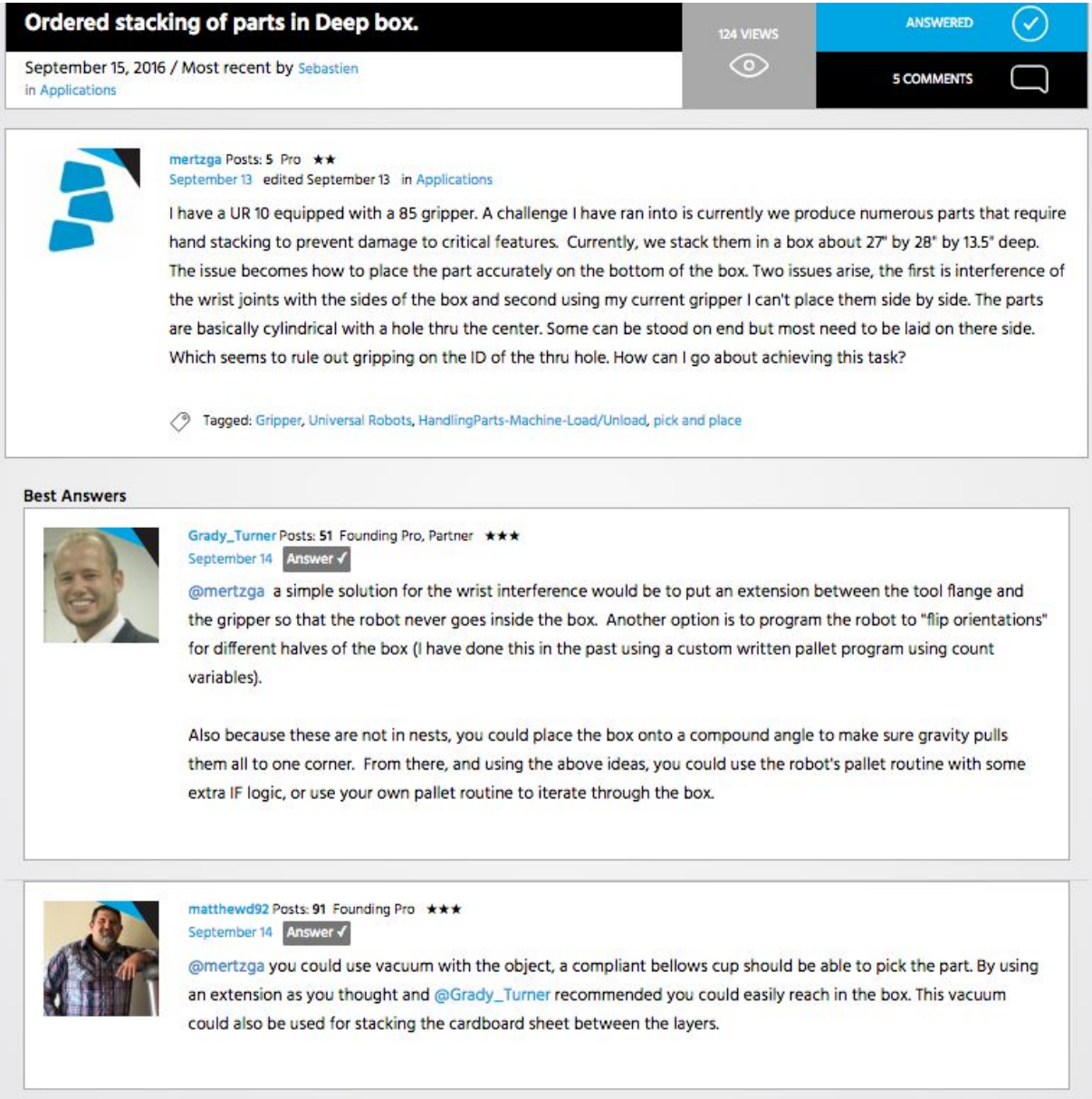
- Flexibility is key
- Gripper options, camera and force sensors can cover a wide range of stations across the factory

BUILD AND SHARE KNOW-HOW

DoF | a Robotiq Community

dof.robotiq.com

An open community where robotics Pros share their know-how and get answers



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EASY TO ORDER & GET LOCAL SUPPORT

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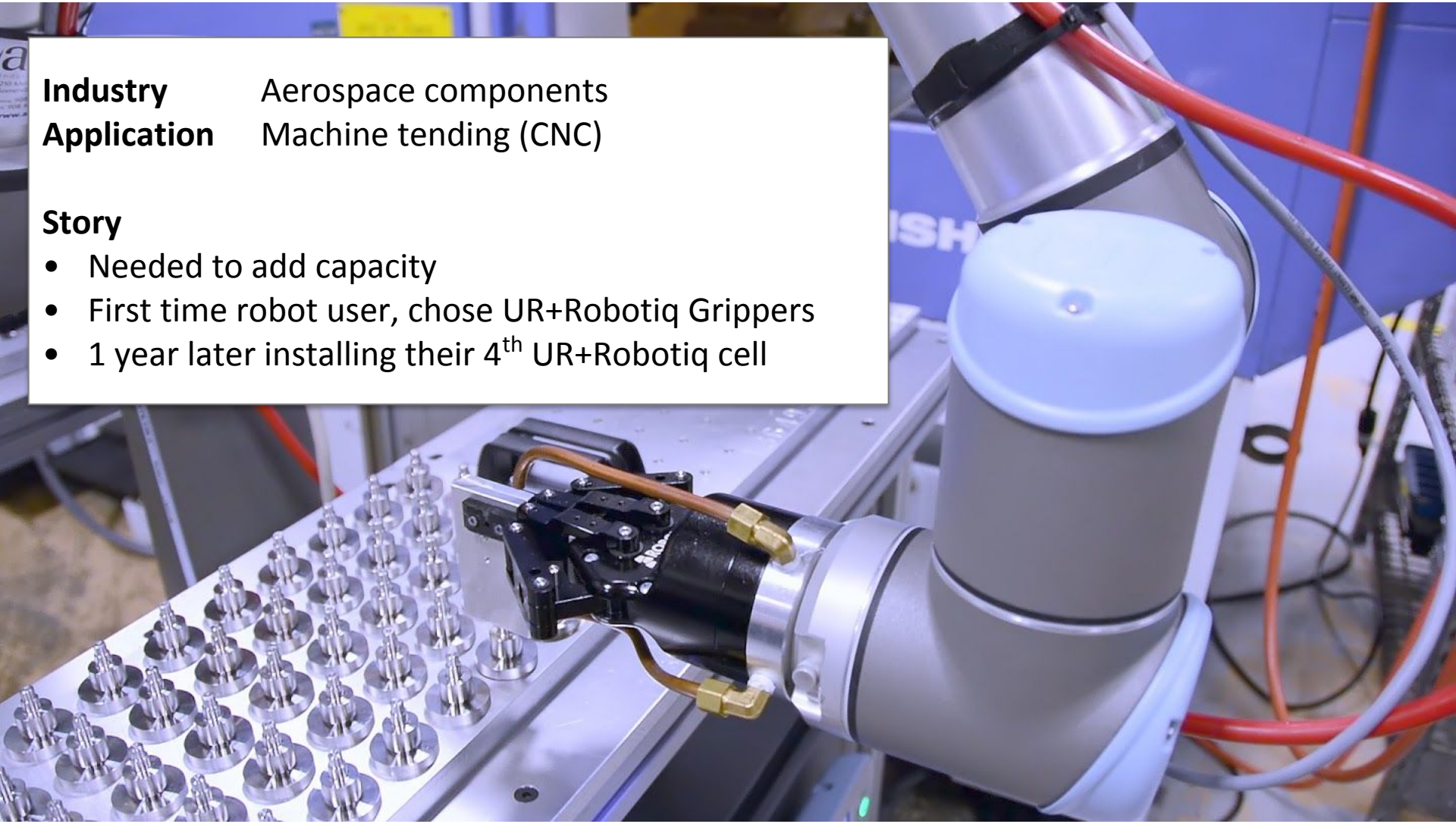
CUSTOMER SUCCESS STORIES

CUSTOMER STORY: WHIPPANY



Industry Aerospace components
Application Machine tending (CNC)

Story

- Needed to add capacity
- First time robot user, chose UR+Robotiq Grippers
- 1 year later installing their 4th UR+Robotiq cell

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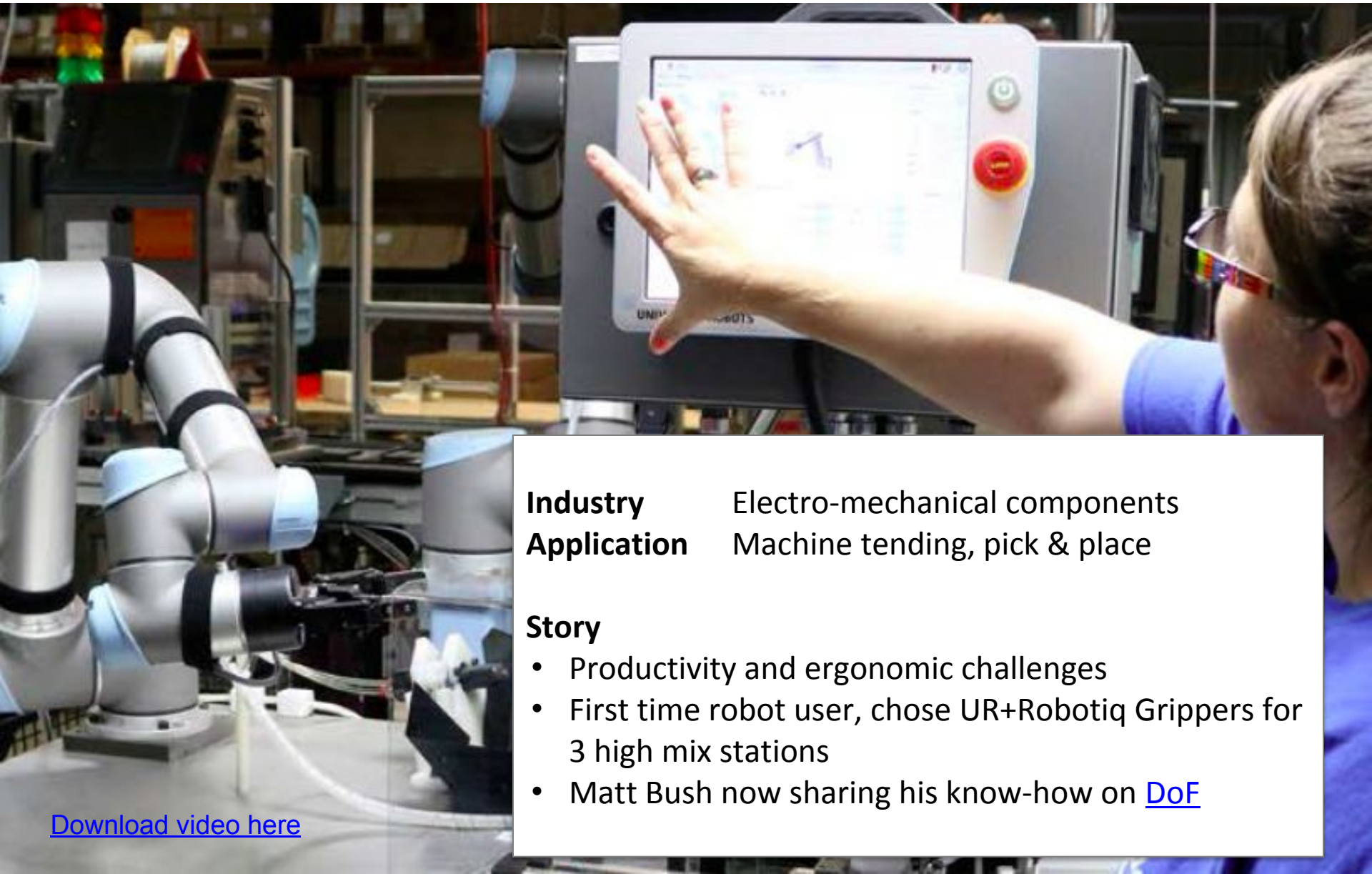
Download video here

CUSTOMER STORY: SCOTT FETZER



Industry Electro-mechanical components
Application Machine tending, pick & place

Story

- Productivity and ergonomic challenges
- First time robot user, chose UR+Robotiq Grippers for 3 high mix stations
- Matt Bush now sharing his know-how on DoF

Download video here

CUSTOMER STORY: HYDRO-GEAR

HYDRO-GEAR® COMMERCIAL

Industry Mechanical components
Application Assembly

Story

- Labor challenges
- First time robot user, chose UR+Robotiq Grippers for 20 assembly stations
- Adam Beachy now integrating, building know-how on DoF

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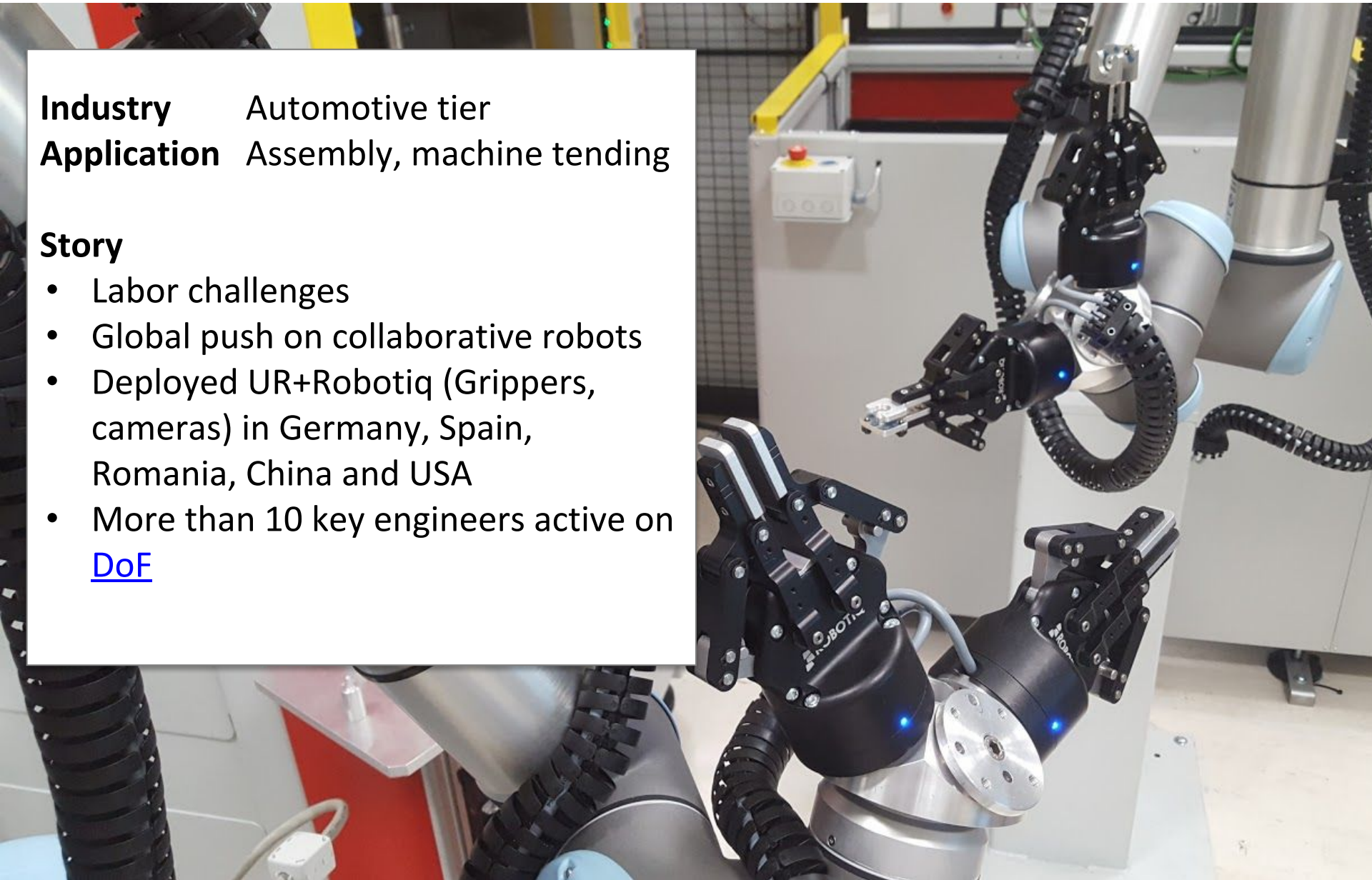
CUSTOMER STORY: CONTINENTAL



Industry Automotive tier
Application Assembly, machine tending

Story

- Labor challenges
- Global push on collaborative robots
- Deployed UR+Robotiq (Grippers, cameras) in Germany, Spain, Romania, China and USA
- More than 10 key engineers active on DoF

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Contact **Robotiq's Team** for more information at sales@robotiq.com

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